IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:
Richard N. ELLSON et al.

Confirmation No.: Unassigned

Serial No.: Unassigned

Group Art Unit: Unassigned

Continuation of Serial No. 09/964,212

Filing Date: Concurrently herewith

Examiner: Unassigned

Title: ACOUSTIC EJECTION OF FLUIDS FROM A PLURALITY OF RESERVOIRS

COMMUNICATION REGARDING A POTENTIAL INTERFERENCE SUBMITTED PURSUANT TO 37 CFR §§ 1.603 AND 1.604

Mail Stop Patent Application
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants hereby submit this Communication Regarding a Potential Interference Pursuant to 37 CFR §§ 1.603 and 1.604.

According to the Patent Application Information Retrieval (PAIR) system, U.S. Patent Application Serial No. 09/735,709 (the '709 application) has been allowed and is considered ready for issue. The '709 application was filed on December 12, 2000, and was published on July 18, 2002, as U.S. Patent Application Publication No. 20020094582A1 to Williams et al. Although applicants are uncertain as to which claim(s) of the '709 application have been allowed, ***applicants have "copied" those claims of the '709 application that were pending prior to the submission of Paper No. 26 (a Supplemental Response entered on April 3, 2003), in order to preserve applicants' right to request an interference.*** Those claims are submitted in the present application.

The information required by 37 CFR §1.604(a) is set forth below:

I. SUGGESTION FOR A PROPOSED COUNT

Pursuant to 37 CFR §1.604(a), applicants suggest the following proposed count:

A device for acoustically ejecting a droplet of fluid from each of a plurality of fluid reservoirs, comprising:

a plurality of reservoirs each adapted to contain a fluid;

an acoustic ejector; and

means for sequentially positioning each of the reservoirs relative to the acoustic ejector at a predetermined distance therefrom, and, when an acoustic coupling medium is present between each reservoir and the acoustic ejector, in acoustic coupling relationship therewith.

Claim 1 of the present application corresponds to the proposed count.

II. IDENTIFICATION OF CLAIM OF THE OTHER APPLICATION WHICH CORRESPONDS TO THE PROPOSED COUNT

Pursuant to 37 CFR §1.604(a)(2), applicants submit that claim 46 of U.S. Patent Application Serial No. 09/735,709, as pending prior to submission of Paper No. 26 (see above), is presumed to be allowed and to correspond to the proposed count. In addition, Appendix A sets forth a table that provides a comparison of all claims of the present application with what applicants presume to be the allowed claims of the '709 application. The table also provides an indication of the passages in the ultimate parent application, i.e., U.S. Patent Application Serial No. 09/669,996,[†] where, at the very least, the claims find support.

III. EXPLANATION WHY AN INTERFERENCE MAY BE DECLARED

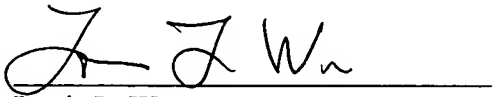
Applicants' claims have been drafted to encompass the same or substantially the same subject matter as what applicants presume to be the subject matter of the allowed claims of the '709 application. For this reason, and because this application and communication are timely

[†] The present application is the latest in a chain of continuation applications which include U.S. Application Serial No. 09/964,212, filed September 25, 2001, which is a continuation-in-part of U.S. Patent Application Serial No. 09/727,392, filed November 29, 2000, which is a continuation-in-part of U.S. Patent Application Serial No. 09/669,996, filed September 25, 2000, now abandoned. Accordingly, applicants should be accorded benefit of these prior applications should an interference be declared. Applicants should also be designated as the senior party in the interference as having the earlier effective filing date, i.e., September 25, 2000, versus December 12, 2000, for the '709 application.

filed, i.e., within one year of the publication of the '709 patent application, declaration of an intereference is proper.

That is, since a potentially interfering claim is made within one year of the publication of the '709 application, and the claims of the '709 application were amended during prosecution, the requirements of 35 USC §135(b)(2) are satisfied. Accordingly, the right of applicants to request an interference between the present application and the '709 application is preserved.

Respectfully submitted,

By: 

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APPENDIX A

Applicants' Claims	Support Found in U.S. Serial No. 09/669,996	Claims of the '709 Application (As believed to be allowed)
1. A device for acoustically ejecting a droplet of fluid from each of a plurality of fluid reservoirs, comprising: a plurality of reservoirs each adapted to contain a fluid; an acoustic ejector; and	Support for device with plurality of reservoirs and an acoustic ejector is found throughout the application. See, e.g., page 11, line 27, to page 16, line 2, FIGS. 1 and 3, and claim 1.	46. An apparatus for performing non-contact transfer of small amounts of source fluid, said apparatus comprising: a source fluid containment structure; an acoustic liquid deposition emitter separated from the source fluid containment structure by a gap, said acoustic liquid deposition emitter being positioned to direct an acoustic wave through the gap towards the source fluid containment structure; and
means for sequentially positioning each of the reservoirs relative to the acoustic ejector at a predetermined distance therefrom, and, when an acoustic coupling medium is present between each reservoir and the acoustic ejector, in acoustic coupling relationship therewith.	Positioning technology is generally discussed on and page 24, lines 18, to page 25, line 5. Movement of the reservoirs is disclosed on page 25, lines 1-3. Placement of the reservoirs at a predetermined distance from the acoustic ejector is disclosed on page 14, line 20-23.	a movable stage supporting the source fluid containment structure and adapted to move so as to position the source fluid containment structure relative to the acoustic liquid deposition emitter such that said acoustic liquid deposition emitter is in operative contact with said source fluid containment structure when a coupling liquid is interposed in the gap there between.
2. The device of claim 1, wherein the acoustic ejector is comprised of an acoustic radiation generator for generating acoustic radiation	Acoustic radiation generator is indicated by reference no. **35**.	47. The apparatus of claim 46, wherein said acoustic liquid deposition emitter further comprises an acoustic wave channel structure.
3. The device of claim 1, wherein the acoustic ejector is comprised of a focusing means for focusing the acoustic radiation generated.	Focusing means is indicated by reference no. **37.**	48. The apparatus of claim 46, wherein aid acoustic liquid deposition emitter further comprises a lens for focusing an acoustic wave.

Applicants' Claims	Support Found in U.S. Serial No. 09/669,996	Claims of the '709 Application (As believed to be allowed)
4. The device of claim 3, wherein the focusing means is comprised of a solid member having a curved surface.	Curved surface is indicated by reference no. **39**.	49. The apparatus of claim 48, wherein said lens is spherical.
5. The device of claim 3, wherein each reservoir is adapted to contain a fluid having a free surface and the focusing means causes acoustic waves from the acoustic ejector to converge at a focal point near the free surface.	Support can be found, e.g., on page 15, line 3-27.	50. The apparatus of claim 48, wherein said lens has an f value in the range of about 1 to about 4.
6. The device of claim 1, wherein the acoustic ejector comprises an acoustic transducer.	Transducers and other acoustic components disclosed on page 13, lines 6-18.	51. The apparatus of claim 46, wherein said acoustic liquid deposition emitter comprises a piezoelectric transducer.
7. The device of claim 6, further comprising a controller for controlling the acoustic ejector.	A controller is disclosed on page 12, line 30 to page 13, line 3, for controlling the ejector depending on the desired performance of the device.	52. The apparatus of claim 46, further comprising controls for varying one or more controls selected from the group consisting of frequency, voltage, and duration controls for an energy source used to excite said piezoelectric transducer and thereby propagate an acoustic wave therefrom.
8. The device of claim 1, further comprising a detector for detecting a fluid level or volume in the reservoirs.	Detection of fluid level is disclosed on page 25, lines 6-29.	53. The apparatus of claim 46, further comprising a fluid level detector adapted to detect a level or volume of fluid in a source fluid containment structure.
9. The device of claim 1, wherein the reservoirs and the ejector are movable with respect to each other.	See comments for claim 1.	54. The apparatus of claim 46, wherein the acoustic liquid deposition emitter is stationary.

Applicants' Claims	Support Found in U.S. Serial No. 09/669,996	Claims of the '709 Application (As believed to be allowed)
10. The device of claim 1, further comprising a substrate for receiving droplets from the reservoirs, wherein the substrate and the reservoirs are movable relative to each other.	Substrate movement is depicted in FIGS 1 and 3, and disclosed in accompanying text on page 12, line 4, to page 16, line 2, and on page 21, line 13, to page 22, line 20 .	55. The apparatus of claim 46, wherein the stage is movable relative to a target.
11. The device of claim 8, wherein the acoustic ejector comprises an acoustic transducer and a focusing means in operative association with the acoustic transducer for focusing acoustic radiation emitted by the acoustic transducer, the device further comprising: an acoustic coupling medium interposed between the focusing means and the reservoirs; and a controller in operable communication with the ejector, wherein the controller is adapted to adjust the acoustic radiation emitted by the acoustic transducer.	See comments for claims 3 and 6. Acoustic coupling media are disclosed on page 14, line 20, to page 15, line 2. See comment for claim 7.	89. An apparatus according to claim 53, wherein said acoustic liquid deposition emitter further comprises a transducer for generating an acoustic wave and a lens in operative association with the transducer for focusing the acoustic wave emitted by the transducer; said apparatus further comprising: a coupling liquid interposed between the lens and the source fluid containment structure; and a computer in operative communication with the acoustic liquid deposition emitter, wherein the computer comprises a computer implemented algorithm for adjusting the frequency of the acoustic wave.

Applicants' Claims	Support Found in U.S. Serial No. 09/669,996	Claims of the '709 Application (As believed to be allowed)
12. The device of claim 8, wherein the acoustic ejector comprises an acoustic transducer and a focusing means in operative association with the acoustic transducer for focusing acoustic radiation emitted by the acoustic transducer, the device further comprising: an acoustic coupling medium interposed between the focusing means and the reservoirs; and a controller in operable communication with the ejector, wherein the controller is adapted to adjust the intensity of acoustic radiation emitted by the acoustic transducer.	See comments for claim 11 Acoustic intensity adjustment is disclosed on page 26, lines 1-17	90. An apparatus according to claim 53, wherein said liquid deposition emitter further comprises a transducer for generating an acoustic wave and a lens in operative association with the transducer for focusing the acoustic wave emitted by the transducer; and further comprising: a coupling liquid interposed between the lens and the source fluid containment structure; and a computer in operative communication with the acoustic liquid deposition emitter, wherein the computer comprises a computer implemented algorithm for adjusting the voltage used to excite the acoustic liquid deposition emitter.
13. The device of claim 8, wherein the acoustic ejector comprises an acoustic transducer and a focusing means in operative association with the acoustic transducer for focusing acoustic radiation emitted by the acoustic transducer, the device further comprising: an acoustic coupling medium interposed between the focusing means and the reservoirs; and a controller in operable communication with the ejector, wherein the controller is adapted to adjust the duration of acoustic radiation emitted by the acoustic transducer.	See comments for claim 11. Acoustic duration adjustment is disclosed on page 25, lines 21-23	91. An apparatus according to claim 53, wherein said liquid deposition emitter further comprises a transducer for generating an acoustic wave and a lens in operative association with the transducer for focusing the acoustic wave emitted by the transducer; and further comprising: a coupling liquid interposed between the lens and the source fluid containment structure; and a computer in operative communication with the acoustic liquid deposition emitter, wherein the computer comprises a computer implemented algorithm for adjusting the duration of the energy used to excite the acoustic liquid deposition emitter.

Applicants' Claims	Support Found in U.S. Serial No. 09/669,996	Claims of the '709 Application (As believed to be allowed)
14. The device of claim 8, wherein the acoustic ejector comprises an acoustic transducer and a focusing means in operative association with the acoustic transducer for focusing acoustic radiation emitted by the acoustic transducer, the device further comprising: an acoustic coupling medium interposed between the focusing means and the reservoirs; and a controller in operable communication with the ejector, wherein the controller is adapted to adjust the relative position reservoirs with the ejector in response to a change in fluid level or volume detected by the detector.	See comments for claim 11. Fluid level feedback control is disclosed on page 26, lines 13-17.	91. An apparatus according to claim 53, wherein said liquid deposition emitter further comprises a transducer for generating an acoustic wave and a lens in operative association with the transducer for focusing the acoustic wave emitted by the transducer; and further comprising: a coupling liquid interposed between the lens and the source fluid containment structure; and a computer in operative communication with the acoustic liquid deposition emitter, wherein the computer comprises a computer implemented algorithm for adjusting the location of the stage relative to the acoustic deposition emitter in response to a change in fluid level or volume detected by the fluid level detector.
15. The device of claim 1, wherein one of the reservoirs is a first well containing a first fluid.	Well plates are depicted in FIG. 2 and disclosed in	93. An apparatus according to claim 46, wherein: said source fluid containment structure comprises a first well containing a first fluid.
16. The device of claim 15, wherein the reservoirs and the ejector are movable with respect to each other.	See comments for claim 9.	94. An apparatus according to claim 93, wherein: at least one of the acoustic liquid deposition emitter and the stage is adapted to move so that a distance between the acoustic deposition emitter and the first well is variable.

Applicants' Claims	Support Found in U.S. Serial No. 09/669,996	Claims of the '709 Application (As believed to be allowed)
17. The device of claim 16, wherein the first fluid has a free surface and the device further comprises a means for maintaining the ejector and the free surface at the same distance as the volume of first fluid in the first well decreases.	See page 26, lines 10-17.	95. An apparatus according to claim 94, further comprising: a translator adapted to maintain a distance between the acoustic liquid deposition emitter and a surface of the first liquid as the volume of the first liquid in the first well decreases.
18. The device of claim 16, wherein the acoustic ejector is adapted to move to compensate for any changes in the level of the first fluid in the first well.	See comments for claim 17.	96. An apparatus according to claim 94, wherein: said acoustic liquid deposition emitter is adapted to move to compensate as the level of the first liquid changes in the first well.
19. The device of claim 16, wherein the means for positioning the reservoirs is adapted to move to compensate for any changes in the level of the first fluid in the first well.	See comments for claim 18	97. An apparatus according to claim 94, wherein: said stage is adapted to move to compensate as the level of the first liquid changes in the first well.
20. The device of claim 16, wherein the acoustic ejector comprises an acoustic transducer and a focusing means that focuses acoustic radiation toward a free surface of the first fluid.	See comments for claims 3 and 6.	98. An apparatus according to claim 94, wherein: the liquid acoustic deposition emitter comprises a piezoelectric transducer that generates acoustic energy and a lens that focuses the acoustic energy toward the surface of the first liquid.
21. The device of claim 1, further comprising a means for interposing the acoustic coupling medium between the acoustic ejector and the reservoirs for transmitting acoustic radiation therebetween.	See, e.g., page 14, lines 20-23 and FIG 1, disclosing and depicting, respectively, the interposition of acoustic coupling medium between the ejector and the reservoirs.	99. An apparatus according to claim 46, further comprising: a reservoir configured to hold the coupling liquid interposed between the acoustic liquid deposition emitter and the source fluid containment structure for transmitting acoustic energy therebetween.

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22. The device of claim 15, wherein another one of the reservoirs is a second well adjacent to the first well and the means for positioning the reservoirs is adapted to move so that the second well in position to allow the acoustic ejector to eject a droplet of a second fluid from the second well.	See comments for claim 1.	100. An apparatus according to claim 93, wherein: said source fluid containment structure futher comprises a second well adjacent to the first well; an said stage is adapted to move so that the second well is positionable in sufficient proximity to the acoustic liquid deposition emitter that acoustic energy from the acoustic liquid deposition emitter propel a portion of a volume of a second liquid from the second well.
23. The device of claim 22, wherein the first and second wells form a portion of a well plate.	See comments for claim 15.	101. An apparatus according to claim 100, wherein: said first well and second well form a portion of a multiwell plate.
24. The device of claim 1, wherein one of the reservoirs is a first well for holding a first fluid and the first well is removable from the means for positioning the reservoirs.	Removable reservoirs are disclosed on page 18, lines 7-10.	102. An apparatus according to claim 46, wherein: said source fluid containment structure comprises a first well for holding a first liquid, said first well being adapted to be removed from the stage.
25. The device of claim 24, wherein the first well forms a portion of a well plate.	See comments for claim 15.	103. An apparatus according to claim 102, wherein: said first well forms a portion of a multiwell plate.
26. The device of claim 1, wherein the acoustic ejector has a curved surface for contacting the acoustic coupling medium and to focus acoustic radiation from the acoustic ejector toward a surface of a fluid containing a reservoir.	See comments for claim 4.	104. An apparatus according to claim 46, wherein: said acoustic liquid deposition emitter has a curved surface for contacting the coupling liquid to form a lens which focuses acoustic energy from the acoustic liquid deposition emitter toward a surface of a liquid contained in the source fluid containment structure.

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27. The device of claim 1, further comprising a controller for controlling the means for position the reservoirs.	See comments for 7	105. An apparatus according to claim 46, further comprising: an actuator for positioning the stage. 106. An apparatus according to claim 105, further comprising: a computer in operable communication with the actuator, wherein the computer comprises a computer implemented algorithm for controlling the positioning of the stage.
28. The device of claim 1, further comprising a biomolecule in a reservoir.	Biomolecules are disclosed, e.g., on page 8, line 11, to page 10, line 9.	107. An apparatus according to claim 46, further comprising: a biological compound contained within the source fluid containment structure.
29. The device of claim 28, wherein the biomolecule is nucletidic, peptidic, polynucleotic, polypeptidic, cellular, or a combination thereof.	See comments for claim 28.	108. An apparatus according to claim 107, wherein: said biological compound comprises a nucleic acid, a peptide, a polypeptide, a eukaryotic cell, a prokaryotic cell, a carbohydrate, or a combination thereof.
30. The device of claim 1, further comprising a chemical compound in a reservoir.	Ejection of various chemical compounds such as solvents are disclosed on page 19, lines 4-11.	109. An apparatus according to claim 46, further comprising: a chemical compound contained within the source fluid containment structure.
31. The device of claim 30, wherein the compound comprises a solvent.	See comments for claim 30.	110. An apparatus according to claim 109, wherein: said chemical compound comprises a dye, a detectable label, a non-enzyme chemical reagent, or a diluent.
32. The device of claim 1, wherein the acoustic ejector is adapted to eject a droplet up to	Ejection of droplets of about 1 picoliter in volume is described on	111. An apparatus according to claim 46, wherein: said acoustic liquid deposition

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about 1 picoliter in volume.	page 19, lines 17-20.	emitter is adapted to generate an acoustic wave causing ejection of at least one droplet of source fluid contained in the source fluid containment structure, said at least one droplet having a diameter of less than about 10,000 micrometers. 112. An apparatus according to claim 46, wherein: said acoustic liquid deposition emitter is adapted to generate an acoustic wave causing ejection of at least one droplet of source fluid contained in the source fluid containment structure, said at least one droplet having a diameter in the range of about 1 micrometer to about 10,000 micrometers 113. An apparatus according to claim 46, wherein: said acoustic liquid deposition emitter is adapted to generate an acoustic wave causing ejection of at least one droplet of source fluid contained in the source fluid containment structure, said at least one droplet having a diameter in the range of about 500 micrometers to about 1,000 micrometers 114. An apparatus according to claim 46, wherein: said acoustic liquid deposition emitter is adapted to generate an acoustic wave causing ejection of at least one droplet of source fluid contained in the source fluid

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		containment structure, said at least droplet having a diameter in the range of about 60 micrometers to about 500 micrometers 115. An apparatus according to claim 46, wherein: said acoustic liquid deposition emitter is adapted to generate an acoustic wave causing ejection of at least one droplet of source fluid contained in the source fluid containment structure, said at least droplet having a diameter in the range of about 120 micrometers to about 250 micrometers 116. An apparatus according to claim 46, wherein: said acoustic liquid deposition emitter is adapted to generate an acoustic wave causing ejection of at least one droplet of source fluid contained in the source fluid containment structure, said at least droplet having a diameter in the range of about 30 micrometers to about 60 micrometers

Applicants' Claims	Support Found in U.S. Serial No. 09/669,996	Claims of the '709 Application (As believed to be allowed)
33. The device of claim 28, wherein the biomolecule is mononucleotidic or oligonucleotidic.	See comments for claim 28.	118. An apparatus according to claim 107, wherein: said biological compound comprises a mono-or oligonucleotide, or combination thereof. 119. An apparatus according to claim 118, wherein said oligonucleotide comprises 2 to 10 nucleotide bases. 120. An apparatus according to claim 118, wherein said oligonucleotide comprises 5 nucleotide bases.
34. The device of claim 28, further comprising substrate for receiving one or more droplets from the reservoirs.	See comments for claim 10.	121. An apparatus of claim 107, further comprising a target functional for binding one or more source materials.
35. The device of claim 34, wherein the substrate contains one or more moieties.	Deposition of moieties on substrate is discussed, e.g., on page 20, line 24, to page 21, line 12.	122. An apparatus according to claim 121, wherein said target bears one or more target materials.
36. The device of claim 44, wherein the one or more moieties are biochemical or chemical compounds.	See comments for claims 28 and 30.	123. An apparatus according to claim 122, wherein said target materials comprise biological or chemical compounds.
37. The device of claim 36, wherein the one or more moieties comprise a polypeptide.	See comments for claim 28.	124. An apparatus according to claim 123, wherein said target materials comprise a polypeptide, and antibody, an enzyme or an immunogen.

Applicants' Claims	Support Found in U.S. Serial No. 09/669,996	Claims of the '709 Application (As believed to be allowed)
38. A device for acoustically ejecting a droplet of fluid from a reservoir onto a substrate, the device comprising an acoustic ejector and a means positioning the reservoir, wherein: the means for positioning the reservoir is adapted to position the reservoir relative to the acoustic ejector whereby the acoustic ejector is coupled to a first surface of the reservoir by an acoustic coupling medium interposed between the acoustic ejector and the first surface of the reservoir, such that an acoustic wave generated by the acoustic ejector is transmitted through the acoustic coupling medium to the first surface of the reservoir and thereafter propagates through the reservoir into the fluid on a second surface of the reservoir opposite the first surface of the reservoir, causing controlled ejection of a droplet of the fluid from the reservoir.	See comments for claim 1 and FIG. 1.	56. An apparatus for performing non-contact transfer of small amounts of source fluid to a target, said apparatus comprising an acoustic liquid deposition emitter and a movable stage wherein: a) said movable stage is adapted to support a source fluid containment structure and is adapted to position the source fluid containment structure relative to the acoustic liquid deposition emitter whereby the acouistic liquid deposition emitter is coupled to a first surface of the source fluid containment structure by a coupling liquid interposed between said acoustic liquid deposition emitter and said first surface of the source fluid containment structure, such that b) an acoustic wave generated by said acoustic liquid deposition emitter is transmitted through said coupling liquid to said first surface of the source fluid containment structure and thereafter propagates through said source fluid containment structure into a pool of source fluid on a second surface of said source fluid containment structure opposite said first surface of the source fluid containment structure, causing controlled ejection of at least one droplet of said source fluid from said pool.